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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/323,512	06/01/1999	BRAD KINDIG	ISAA0037	9272

7590 12/15/2003

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EXAMINER	
COLBERT, ELLA	
ART UNIT	**PAPER NUMBER**
3624	

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/323,512	KINDIG ET AL.
	Examiner	Art Unit
	Ella Colbert	3624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-12 and 14-38 are pending. Claims 1, 8, 12, 30, 36, and 37 have been amended in this communication filed 11/14/03 entered as Amendment C, paper no. 20.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/14/03 has been entered as RCE with Extension of Time, paper no. 19 and Amendment C filed 11/14/03, paper no. 20.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims1, 8, 12, 20, 30, 36, 37, and 38 recites the limitation "... if the identified section does not have sufficient space ...". This is a conditional statement and it is not understood what the result would be if the identified section does have sufficient space to contain the new data record. Clarification in the claim language is respectfully requested.

Claim 8 recites the limitation "... each of the new data records ..." in line 3 and in line 6 recites "... associated key of the new data record". Claim 30, line 1 page 14 has a similar problem. There is insufficient antecedent basis for this limitation in the claim.

Claim 37, lines 9-14 recite "wherein said control program has capability of receiving ... the database, of selecting one of the said sections ..., and of determining whether the selected section ...". This claim limitation is confusing. Do Applicants' mean "wherein said control program has the capability of receiving ... the database, selecting one of the said sections ..., and determining whether the selected section ..."?

Claim 38, line 6 recites "... from the primary secondary storage to". This claim limitation is unclear. Do Applicants' mean "... from the primary storage to the secondary storage to"? Also, claim 38, line 9 recites "... primary storage and/or the secondary storage;". It is unclear what Applicants' mean by this limitation. Do Applicants' mean "... primary storage and the secondary storage;" or "... primary storage or the secondary storage;".

Claim Objections

5. Claims 2, 9, 30, and 31 are objected to because of the following informalities: claim 2, line 1 recites "... one or more data record". This line would be better recited "... one or more data records". Claims 9, 30, and 31 have a similar problem. Appropriate correction is required.

Claim 12 is objected to because of the following informalities: Claim 12, line 11 recites "..., the control program 25 removing selected data records according to a".

This line would be better recited "..., the control program removing selected data records according to a". Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over (US 6,442,553) Take in view of (US 5,893,120) Nemes.

With respect to claims 1 and 30, Take teaches receiving a new data record and a key that is associated with the new data record (col. 1, lines 36-44); identifying one of the sections based upon the associated key of the new data record (col. 2, lines 27-35); determining if said identified section has sufficient space to contain the new data record (col. 1, lines 45-63); and storing the new data record in the identified section (col. 2, lines 40-50). Take fails to teach, deleting one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record or storing the new data record in the identified section. Nemes teaches deleting one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record (col. 5, lines 16-34 and lines 53-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to delete one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record and to modify in Take because such a modification would allow Take's system to save space since the space in a database is limited to the amount of data contained in a certain number of records in the database.

With respect to claims 2 and 31, Take fails to teach deleting one or more data record includes identifying one or more data records according to a ranking function. Nemes teaches deleting one or more data record includes identifying one or more data records according to a ranking function (col. 6, lines 9-13 and lines 35-45. It would have been obvious to one having ordinary skill in the art at the time the invention was made to delete one or more records including identifying one or more data records according to a ranking function and to modify in Take because such a modification would allow Take's system to save space since the space in a database and to have a finite sequence of steps (which is well known in the art) for performing the ranking function.

With respect to claims 3 and 32, Take fails to teach the ranking function is a least recently used algorithm. Nemes teaches the ranking function is a least recently used algorithm (col. 7, lines 65-67 and col. 8, lines 1-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the ranking function as a least recently used algorithm and to modify in Take because such a modification would allow Take's system to have a finite sequence of steps (which is well known in the art) for performing the ranking function.

With respect to claim 4, Take teaches the ranking function is a function of the statistical properties of the data being stored (col. 8, lines 35-43).

8. Claims 5-11 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Take and Nemes in view of (US 5,809,494) Nguyen.

With respect to claim 5, Take and Nemes fail to teach, each of the plurality of sections is an integer multiple of the page size that is used by an operating system to transfer data between a primary storage and a secondary storage. Nguyen teaches each of the plurality of sections is an integer multiple of the page size that is used by an

operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 33-39, col. 4, lines 39-67, and col. 5, lines 1-4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have each of the plurality of sections is an integer multiple of the page size that is used by an operating system to transfer data between a primary storage and a secondary storage and to modify in Take because such a modification would allow Take to have a data structure to enable the rapid retrieval of items by using a "hash table" and to have a database to be searched with a hash table that fits into primary storage (such as RAM) with the item being sought accessed in secondary storage.

With respect to claim 6, Take and Nguyen fail to teach the sections are about the same page size that is used by an operating system to transfer data between a primary storage and a secondary storage. Nemes teaches of the sections is about the same page size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 66-67, col. 2, lines 1-15 and lines 53-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sections is about the same page size that is used by an operating system to transfer data between a primary storage and a secondary storage and to modify in Take because such a modification in Take would allow Take's system to save space since the space in a database since the space in a database is limited to the amount of data contained in a certain number of records.

With respect to claim 7, Take fails to teach, additionally comprising allocating a contiguous memory space to contain each of the sections. Nguyen teaches, additionally comprising allocating a contiguous memory space to contain each of the sections (col. 4, lines 39-54). Nemes teaches additionally comprising allocating a contiguous memory space to contain each of the sections (col. 1, lines 66-67 and col. 2,

lines 1-15 and lines 53-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to allocate a contiguous memory space to contain each of the sections and to modify in Take because such a modification would allow Take to have the number of memory blocks with each block accommodating information with respect to a range of hash values.

With respect to claim 8, Take teaches, receiving one or more new data records, each of the new data records having an associated key (col. 1, lines 36-44); identifying a section from a plurality of sections, the identifying based upon the associated key of the new data record (col. 2, lines 27-35); determining if said identified section does not have sufficient space to contain the new data record (col. 1, lines 45-63); and storing the new data record in the identified section (col. 2, lines 40-50). Take fails to teach, deleting one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record. Nemes teaches deleting one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record (col. 5, lines 16-34 and lines 53-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to delete one or more data records from the identified section if the identified section does not have sufficient space to contain the new data record and to modify in Take because such a modification would allow Take's system to save space since the space in a database is limited to the amount of data contained in a certain number of records in the database.

With respect to claim 9, Take fails to teach deleting one or more data record includes identifying one or more data records according to a ranking function. Nemes teaches deleting one or more data record includes identifying one or more data records according to a ranking function (col. 6, lines 9-13 and lines 35-45. It would have been

obvious to one having ordinary skill in the art at the time the invention was made to delete one or more records including identifying one or more data records according to a ranking function and to modify in Take because such a modification would allow Take's system to save space since the space in a database and to have a finite sequence of steps (which is well known in the art) for performing the ranking function.

With respect to claim 10, Take fails to teach, the ranking scheme identifies which ones of the data records are the least recently used. Nguyen teaches, the ranking scheme identifies which ones of the data records are the least recently used (col. 4, lines 59-67 and col. 5, lines 1-12). Nemes teaches, the ranking scheme identifies which ones of the data records are the least recently used (col. 6, lines 9-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the ranking scheme identifies which ones of the data records are the least recently used and to modify in Take because such a modification would allow Take to have the hashed data for successive records accumulated in each memory-block until it fills.

With respect to claim 11, Take and Nguyen fail to teach the sections are about the same size that is used by an operating system to transfer data between a primary storage and a secondary storage. Nemes teaches of the sections is about the same page size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 66-67, col. 2, lines 1-15 and lines 53-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sections is about the same page size that is used by an operating system to transfer data between a primary storage and a secondary storage and to modify in Take because such a modification in Take would allow Take's system

to save space since the space in a database since the space in a database is limited to the amount of data contained in a certain number of records.

With respect to claim 33, Take and Nemes fails to teach, the database occupies a single contiguous physical memory space. Nguyen teaches, the database occupies a single contiguous physical memory space (col. 2, lines 45-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the database occupy a single contiguous physical memory space and to modify in Take because such a modification would allow Take to have the number of memory blocks with each block accommodating information with respect to a range of hash values.

With respect to claim 34, Take and Nemes fail to teach, the size of each of the sections is an integer multiple to the page size that is used by an operating system to transfer data between a primary storage and a secondary storage. Nguyen teaches each of the plurality of sections is an integer multiple of the page size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 33-39, col. 4, lines 39-67, and col. 5, lines 1-4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the size of each of the sections is an integer multiple of the page size that is used by an operating system to transfer data between a primary storage and a secondary storage and to modify in Take because such a modification would allow Take to have a data structure to enable the rapid retrieval of items by using a "hash table" and to have a database to be searched with a hash table that fits into primary storage (such as RAM) with the item being sought accessed in secondary storage.

With respect to claim 35, Take and Nguyen fail to teach the size of each of the sections is about equal to the page size that is used by an operating system to transfer

data between a primary storage and a secondary storage. Nemes teaches the size of each of the sections is about equal to the page size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 66-67, col. 2, lines 1-15 and lines 53-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the size of each of the sections to be about equal to the page size that is used by an operating system to transfer data between a primary storage and a secondary storage and to modify in Take because such a modification in Take would allow Take's system to save space since the space in a database since the space in a database is limited to the amount of data contained in a certain number of records.

9. Claims 12 and 14-29 are rejected as being unpatentable over (US 5,809,494) Nguyen and (US 6,442,553) Take in view of (US 5,893,120) Nemes.

With respect to claims 12 and 20, Nguyen teaches a plurality of sections, each of the sections being about the same memory size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 3, lines 1-8). Nguyen fails to teach, a control program which receives a request for the storage of a data record, the control program selecting one of the sections based upon a key and storing the data record in the selection section. Take teaches, a control program which receives a request for the storage of a data record, the control program selecting one of the sections based upon a key and storing the data record in the selection section (col. 4, lines 44-56). Nguyen and Take fail to teach, wherein the control program determines whether the selected section contains sufficient unused space to hold the data record and if the section does not have sufficient space the control program removing selected data records according to a ranking function. Nemes teaches, wherein the control program determines whether the selected section contains sufficient unused space to

hold the data record and if the section does not have sufficient space the control program removing selected data records according to a ranking function (col. 6, lines 9-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the control program determine whether the selected section contains sufficient unused space to hold the data record and if the section does not have sufficient space the control program removing selected data records according to a ranking function and to modify in Nguyen because such a modification would allow Nguyen to perform an on-the-fly removal of the expired record from the list and the return of storage it occupies to the system storage pool.

With respect to claims 14 and 21, Nguyen teaches, the ranking function determines a last access time for each of the data records or the selected sections (3, lines 9-19).

With respect to claims 15 and 23, Nguyen teaches at least one of the sections includes at least one item of section information (col. 3, lines 20-32).

With respect to claims 16 and 24, Nguyen teaches, the section information includes the number of data records that are contained in the section (col. 3, lines 33-54).

With respect to claims 17 and 25, Nugyen teaches, the section information includes an offset from the beginning of the section to the first unused position within the section (col. 5, lines 13-27).

With respect to claims 18 and 26, Nguyen teaches, the section information includes a section number that is associated with the section (col. 4, lines 6-18).

With respect to claims 19 and 27, Nguyen, Take, and Nemes fail to teach, comprising a client application which provides the storage request of the data record and the key to the control program, but it would have been obvious to one having

ordinary skill in the art at the time the invention was made to have a client application which provides the storage request of the data record and to modify in Nguyen because such a modification would allow Nguyen's system to have interfaces which are related functions (for example providing a storage request or the key to a control program) through which a client application accesses the service of a server application which is well known in the art.

With respect to claim 22, Nguyen and Take fail to teach, each of the data records stores at least one user profile. Nemes teaches, each of the data records stores at least one user profile (col. 4, lines 26-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have each of the data records store at least one user profile and to modify in Nguyen because such a modification in Nguyen's system would allow Nguyen's operating system to coordinate the activities of the computer system including the storage of data records with a user profile.

With respect to claim 28, Nguyen teaches each of the plurality of sections is an integer multiple of the page size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 1, lines 33-39, col. 4, lines 39-67, and col. 5, lines 1-4).

With respect to claim 29, Nguyen teaches, the size of each of the sections is about equal to the transfer size that is used by an operating system to transfer data between a primary storage and a secondary storage (col. 2, lines 50-65 and col. 5, lines 6-29).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by (US 5,809,494) Nguyen.

With respect to claims 36 and 37, Nguyen teaches, a primary storage (col. 1, lines 66-67 and col. 2, lines 1-4); a secondary storage having a plurality of pages (col. 2, lines 4-9); a plurality of sections, wherein each of the sections is adapted to contain one or more data records, and wherein each of the sections resides in the secondary storage on one of the plurality of pages (col. 3, lines 1-32); and a control program which receives a request for the retrieval of a data record, the control program retrieving the data record from the secondary storage and storing the data record in the primary storage, wherein the retrieval operation reads at most one page from the secondary storage (col. 4, lines 6-29, col. 6, lines 61-67, and col. 7, lines 1-12).

12. Claim 38 is rejected as being unpatentable over (US 5,809,494) Nguyen and in view of (US 5,893,120) Nemes.

With respect to claim 38, Nguyen teaches, a client application (col. 4, lines 19-29); a primary storage comprising a plurality of pages (col. 1, lines 66-67 and col. 2, lines 1-4); a secondary storage comprising a plurality of pages (col. 2, lines 4-9); and a database data structure having a plurality of sections, each of the sections residing on one of the pages in the primary storage and/or the secondary storage (col. 2, lines 1-15 and lines 50-67). Nguyen fails to teach a caching subsystem for copying pages from

the primary secondary storage to the pages in the primary storage and vice-versa. Nemes teaches, a caching subsystem for copying pages from the primary secondary storage to the pages in the primary storage and vice-versa (col. 8, lines 22-44). Nguyen fails to teach, the selected section contains sufficient unused space to hold the data record, and wherein if the section does not have sufficient space, the database manager removes selected data records according to a ranking function. Nemes teaches, the selected section contains sufficient unused space to hold the data record, and if the section does not have sufficient space, the database manager removes the selected data records according to a ranking function (col. 1, lines 49-57, col. 5, lines 16-34 and lines 53-57 and col. 7, lines 52-64). It would have been obvious to one having ordinary skill in the art at the time the invention was made to copy pages from secondary primary storage to the pages in the primary storage and vice-versa and to have the selected section contain sufficient unused space to hold the data record, and if the section does not have sufficient space, the database manager removes the selected data records according to a ranking function and to combine Nguyen's secondary storage with Nemes' copying pages from secondary storage to the pages in the primary storage and vice-versa and to have the selected section contain sufficient unused space to hold the data record, and if the section does not have sufficient space, to have the database manager remove selected data records according to a ranking function because such a modification in Nguyen would allow Nguyen's system to save space since the space in a database is limited to the amount of data contained in a certain number of records in the database. Nguyen and Nemes fails to teach, a client application, a caching subsystem, or a database manager for receiving requests from the client application to store a data record in the database data structure, wherein the database manager selects one of the sections and stores the data record in the

selected section, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a client application, a caching subsystem, or a database manager for receiving requests from the client application to store a data record in the database data structure, wherein the database manager selects one of the sections and stores the data record in the selected section and in view of Nguyen's teachings of a database, storage, and records in col. 1, lines 33-48 and a data structure in col. 1, lines 49-50 and Nemes' teachings of records and storage to modify in Nguyen and Nemes because such a modification would allow their systems to have a database manager that is familiar with the content of the client application and a special memory subsystem in which frequently used data values are duplicated for quick access which is well known in the art. It is well known in the art that a memory cache stores the contents of frequently accessed RAM locations and the addresses where data items are stored and when the processor references an address, the cache checks to see whether it holds that address.

Response to Arguments

13. Applicants' arguments with respect to claims 1-38 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Chauhan (US 6,330,557) disclosed storing data in a hash table.

Inquires

.15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ella Colbert whose telephone number is 703-308-7064. The examiner can normally be reached on Monday-Thursday from 6:30 am -5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vincent Millin can be reached on 703-308-1038. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for Official communications and 703-746-5622 for Unofficial Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

E. Colbert
December 8, 2003